Telemedicine

The use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health, and health administration.

Telemedicine yields equivalent patient satisfaction when employed in surgical as compared to medical Neuro-Oncology patients with the potential to lessen the financial and time burden on neuro-oncology patients [1].

Telemedicine in the COVID-19 era

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Telemedical Deep Brain Stimulation: Merits and Limitations [2].

Jackson et al. performed a retrospective chart review of children with intracranial hemorrhage transferred for emergent neurosurgical intervention between January 1, 2011 and December 31, 2016. We identified those patients whose neuroimaging was transmitted via telemedicine to the neurosurgical team prior to arrival at our center and then compared the telemedicine and nontelemedicine groups. Mann-Whitney U and Fisher exact tests were used to compare interval variables and categorical data.

SETTING: Single-center study performed at Johns Hopkins Hospital.

PATIENTS: Patients less than or equal to 18 years old transferred for operative intracranial hemorrhage.

INTERVENTIONS: Pediatric transport implemented routine telemedicine use via departmental smart phones to facilitate transfer of information and imaging and reduce time to definitive care by having surgical services available when needed.

MEASUREMENTS AND MAIN RESULTS: Fifteen children (eight in telemedicine group; seven in nontelemedicine group) met inclusion criteria. Most had extraaxial hemorrhage (87.5% telemedicine group; 85.7% nontelemedicine group; p = 1.0), were intubated pre transport (62.5% telemedicine group; 71.4% nontelemedicine group; p = 1.0), and arrived at our center's trauma bay during night shift or weekend (87.5% telemedicine group; 57.1% nontelemedicine group; p = 0.28). Median trauma bay Glasgow Coma Scale scores did not differ (eight in telemedicine group; seven in nontelemedicine group; p = 0.24). Although nonsignificant, when compared with the nontelemedicine group, the telemedicine group had decreased rates of repeat preoperative neuroimaging (37.5% vs 57%; p = 0.62), shorter median times from trauma bay arrival to surgery (33 min vs 47 min; p = 0.22) and from diagnosis to surgery (146.5 min vs 157 min; p = 0.45), shorter intensive care stay (2.5 vs 5

d) and hospitalization (4 vs 5 d), and higher home discharge rates (87.5% vs 57.1%; p = 0.28).

Telemedicine use during interhospital transport appears to expedite definitive care for children with intracranial hemorrhage requiring emergent neurosurgical intervention, which could contribute to improved patient outcomes [3].

Existing literature suggests that use of telemedicine during postoperative appointments can increase access to care and is valued by patients and providers alike.

Selected patients with head trauma who have a pathological CT scan may be safely managed in level II trauma centres following neurosurgical consultation using teleradiology [4].

Telemedicine avoids unnecessary travel time and was welcomed by the majority of patients without compromising clinical or functional outcomes. [5].

Pediatric patients in areas of the continental US and its territories with limited access to pediatric neurosurgery services could benefit from this model, if other pediatric neurosurgery centers provide telehealth services [6].

The pooled data presents compelling evidence that the WhatsApp Messenger app is a promising system, whether used as a communication tool between health care professionals, as a means of communication between health care professionals and the general public, or as a learning tool for providing health care information to professionals or to the general population. However, high-quality and properly evaluated research is needed, as are improvements in descriptions of the methodology and the study processes. These improvements will allow WhatsApp Messenger to be categorically defined as an effective telemedicine tool in many different fields of health care [7].

Telemedicine in general provides clinical healthcare at a distance by using videotelephony and teleradiology and is used particularly in acute stroke care medicine (TeleStroke).

see Telestroke.

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see smartphone

James describes the creation, structuring, and development of a pediatric neurosurgery telemedicine clinic (TMC) to provide telehealth across geographical, time, social, and cultural barriers.

In July 2009 the University of Florida (UF) Division of Pediatric Neurosurgery received a request from the Southeast Georgia Health District (Area 9-2) to provide a TMC to meet regional needs. The Children's Medical Services (CMS) of the State of Georgia installed telemedicine equipment and site-to-site connectivity. Audiovisual connectivity was performed in the UF Pediatric Neurosurgery office, maintaining privacy and HIPAA (Health Insurance Portability and Accountability Act) requirements. Administrative steps were taken with documentation of onsite training of the secretarial and nursing personnel of the CMS clinic. Patient preregistration and documentation were performed as required by

the UF College of Medicine-Jacksonville. Monthly clinics are held with the CMS nursing personnel presenting the pertinent clinical history and findings to the pediatric neurosurgeon in the presence of the patient/parents. Physical findings and diagnostic studies are discussed, and management decisions are made. RESULTS The first TMC was held in August 2011. A total of 40 TMC sessions have been held through January 2016, with a total of 43 patients seen: 13 patients once; 13 patients twice; 8 patients for 3 visits; 2 for 4 visits; 2 for 6 visits; 2 for 5 visits; 2 for 7 visits; and 1 patient has been seen 8 times. CONCLUSIONS Pediatric patients in areas of the continental US and its territories with limited access to pediatric neurosurgery services could benefit from this model, if other pediatric neurosurgery centers provide telehealth services [8].

Telemedicine in Spine

There is still much uncertainty as to whether it will have a permanent role in treating spine patients. Some of the ongoing legal challenges include patient confidentiality, liability coverage for treating healthcare workers, and financial reimbursements by insurance companies. One of the impediments of telemedicine is its lack of a standard legal framework. Telehealth is currently regulated through a state-based system with each state having its own policy regarding this practice. In addition, each of the components of a virtual visit represents a potential area for legal concerns. Nonetheless, telemedicine has the ability to provide convenient and effective health care to patients. However, the spine surgeon, as well as other physicians, must consider the legal issues along with some socioeconomic factors identified herein. Moreover, without parity and uniformity, the incentive to offer telehealth services decreases. There may be a need for modifications in the law, insurance policies, and medical malpractice coverage to strengthen their support for telemedicine usage. As spine surgeons become more familiarized with the telemedicine framework, its role in patient care will likely expand [9].

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